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Definitions

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E - EYELETING

e

The base of natural logarithms.

E

See "modulus of elasticity."

earing

Forming a scalloped edge around a deep drawn sheet metal part due to directional properties in the blank material.

EAROM

See "electrically alterable read only memory."

earphone

An electrically driven acoustic transducer intended to operate in the audio frequency range and to be held against the ear while in use.

EBCDIC

See "Extended Binary Coded Decimal Interchange Code."

ebullition

The act of boiling or bubbling.

eccentric

Describing any rotating mechanism whose center of rotation does not coincide with the geometric center of the rotating member.

eccentric orifice

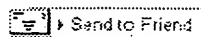
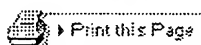
An orifice whose center does not coincide with the centerline of the pipe or tube; usually, the eccentricity is toward the bottom of a pipe carrying flowing gas and toward the top of a pipe carrying liquid, which tends to promote the passage of entrained water or air rather than allowing entrained water or gas to build up in front of the orifice.

echo

1. A reflected wave returned with sufficient amplitude and phase shift delay to be detected as a wave distinct from the wave originally transmitted. 2. In MS DOS, the echo command prints the text of the command on the screen as they are executed.

echo check

A check of accuracy of transmission in which the information which was transmitted to an output device is returned to the information source and compared with the original information to insure accuracy of output.



electrogalvanizing

Coating a metal with electrodeposited zinc.

electrograph

1. A tracing produced on prepared sensitized paper or other material by passing an electric current or electric spark through the paper. 2. A plot or graph produced by an electrically controlled stylus or pen.

electroless plating

Deposition of a metal from a solution of its ions by chemical reduction induced when the basis metal is immersed in the solution, without the use of impressed electric current.

electrolytic cleaning

See "electrochemical cleaning."

electrolytic corrosion

See "electrochemical corrosion."

electrolytic deposition

See "electrodeposition."

electrolytic etching

Engraving a pattern on a metal surface by electrolytic dissolution.

electrolytic grinding

A combined grinding and electrochemical machining operation in which an electrically conductive grinding wheel is made the cathode and the workpiece the anode, and an electric current is impressed between them in the presence of a chemical electrolyte.

electrolytic hygrometer

An apparatus for determining water vapor content of a gas by directing it at known flow rate through a Teflon or glass tube coated on the inside with a thin film of P₂O₅ (phosphorus pentoxide), which absorbs water from the flowing gas; the water is dissociated by a DC voltage impressed on a winding embedded in the hygroscopic film dissociates the water, and the resulting current represents the number of molecules dissociated; a calculation based on flow rate, current and temperature yields water concentration in ppm.

electrolytic machining

See "electrochemical machining."

electrolytic pickling

Removal of scale and surface deposits by electrolytic action in a chemically active solution.

electrolytic powder

Metal powder that is produced directly or indirectly by electrodeposition.

electromagnet

Any magnet assembly whose magnetic field strength is determined by the magnitude of an electric current passing through some portion of the assembly.

electromagnetic

1. Pertaining to phenomena in which electricity and magnetism are related. 2. (When used as a third modifier as per S37.1) Converting a change of measurand into an output induced in a conductor by a change in magnetic flux, in the absence of excitation [S37.1].

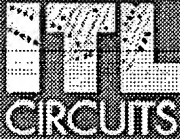

electromagnetic field sensitivity

The maximum output of a transducer in response to a specified amplitude and frequency of magnetic field, usually expressed in gauss equivalent to a stated fraction of 1 g [RP37.2].

electromagnetic instrument

Any instrument in which the indicating means or recording means is positioned by mechanical

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GLOSSARY

ITL offers the following glossary with the objective of improving communication among all who design, purchase and use printed circuit boards.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z



A

Activating A treatment that renders nonconductive material receptive to electroless deposition. Non preferred synonyms: Seeding, Catalyzing, and Sensitizing.

Annular Ring The conductive foil and plating surrounding a hole.

Artwork Master An accurately scaled (usually 1:1) pattern which is used to produce the production master.

Aspect Ratio The ratio of the circuit board thickness to the smallest hole diameter.

B

B-Stage Material Sheet material impregnated with a resin cured to an intermediate stage (B- stage resin). Prepreg is the preferred term.

Backplanes and Panels Interconnection panels into or onto which printed circuits, other panels, or integrated circuit packages can be plugged or mounted.

Barrel The cylinder formed by plating through a drilled hole.

Base laminate The substrate material upon which the conductive pattern may be formed. The base material may be rigid or flexible.

"Bed-of-Nails" Technique A method of testing printed circuit boards that employs a test fixture mounting an array of contact pins configured so as to engage plated-through holes on the board.

Blind-Via A mechanically or laser drilled hole which only interconnects the second or third layer to the surface layer of the board.

Bond Strength The force per unit area required to separate two adjacent layers of a board by a force perpendicular to the board surface.

Buried-Via A mechanically or laser drilled hole which interconnects internal layers only.

C

C-Stage The condition of a resin polymer when it is in the solid state, with high molecular weight, being insoluble and infusible.

Center-To-Center Spacing The nominal distance between the centers of adjacent features or traces on any layer of a printed circuit board.

Chamfer A corner which has been rounded or angled to eliminate an otherwise sharp edge.

Clad or Cladding A relatively thin layer or sheet of metal foil which is bonded to a laminate core to form the base material for printed circuits.

Clearance Hole A hole in the conductive pattern larger than, but concentric with, a hole in the printed board base material.

Coefficient of Expansion, Thermal The fractional change in dimension of a material for a unit change in temperature.

Component Hole A hole used for the attachment and electrical connection of component terminations, including pins and wires, to the printed circuit board.

Component Side That side of the printed circuit board on which most of the components will be mounted.

Conductive Pattern The configuration or design of the conductive material on the base laminate. Includes conductors, lands, and through connections.

<http://www.itlcircuits.com/glossary.htm>

6/1/04

Conductor Base Width The conductor width at the plane of the surface of the base material. See also: Conductor Width.

Conductor-To-Hole Spacing The distance between the edge of a conductor and the edge of a supported or unsupported hole.

Conductor Width The observable width of the pertinent conductor at any point chosen at random on the printed circuit board.

Copper Foil A cathode-quality electrolytic copper used as a conductor for printed circuits. It is made in a number of weights (thicknesses); the traditional weights are 1 and 2 ounces per square foot (0.0014 and 0.0028 inch thick).

Current-Carrying Capacity The maximum current which can be carried continuously, under specified conditions, by a conductor without causing degradation of electrical or mechanical properties of the printed circuit board.

D

Datum Reference A defined point, line, or plane used to locate the pattern or layer for manufacturing, inspection, or for both purposes.

Deburring Process of removing a burr after board drilling. Deburring operations fall into two categories: producing a clean, sharp edge when removing heavy burr; and radiusing the edge of the holes to prevent build-up in plating.

Dielectric An insulating medium which occupies the region between two conductors.

Digitizing Any method of reducing feature locations on a flat plane to digital representation in X-Y coordinates.

Dimensional Stability A measure of dimensional change caused by factors such as temperature, humidity, chemical treatment, age, or stress; usually expressed as units/unit.

Dimensioned Hole A hole in a printed circuit board where the means of determining location is by coordinate values not necessarily coinciding with the stated grid.

Dry-Film Resists Coating material in the form of laminated photosensitive film specifically designed for use in the manufacture of printed circuit boards and chemically machined parts. They are resistant to various electroplating and etching processes. Artwork or Photo-tool is used to expose the circuit pattern onto the dry-film resist.

E

Electroless Deposition The deposition of conductive material from an auto catalytic reduction of a metal ion on certain catalytic surfaces.

Electroplating The electrodeposition of a metal coating on a conductive object. The object to be plated is placed in an electrolyte and connected to one terminal of a d-c voltage source. The metal to be deposited is similarly immersed and connected to the other terminal. Ions of the metal provide transfer to metal as they make up the current flow between the electrodes.

Etch Factor The ratio of the depth of etch (conductor thickness) to the amount of lateral etch (undercut).

Etchback The controlled removal of all components of base material by a chemical process on the side wall of holes in order to expose additional internal conductor areas.

Etching The process of removing unwanted metallic substance (bonded to a base) via chemical, or chemical an electrolytic means.

F

First Article A sample part or assembly manufactured prior to the start of production for the purpose of assuring that the manufacturer is capable of manufacturing a product that will meet specified requirements.

Flux A substance used to promote or facilitate fusion, such as a material used to remove oxides from surfaces to be joined by soldering or welding.

Foil A thin sheet of metal, usually copper or aluminum, used as the conductor for printed circuits. The thinner the foil, the lower the required etch. time. Thinner foils also permit finer definition and spacing. See Copper Foil.

Fused Coating A metallic coating (usually tin or solder alloy) which has been melted and solidified forming a metallurgical bond to the base material.

G

Ground Plane A conductor layer, or portion of a conductor layer, used as a common reference point for circuit returns, shielding, or heat sinking.

I

Internal Layer A conductive pattern which is contained entirely within a multilayer printed board.

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E Glass

A low alkali lime alumina borosilicate glass with good electrical properties.

Edge Definition

The reproduction fidelity of a pattern's edge relative to the production master.

Edge Detection

The ability to recognize (differentiate) the location of an edge.

Edge Rate

The rate of change in voltage with time of a logic signal transition.

Edge Short

An electrical short caused by carrier tape leads making contact with the edge of a semiconductor die.

Edge Spacing

The distance of a pattern or component body from the edges of a printed board.
(See also "Margin.")

Edge-Board Connector

A connector that is used specifically for making nonpermanent interconnections with the edge-board contacts on a printed board.

Edge-Board Contact(s)

Printed contact(s) on or near any edge of a printed board, that are used specifically for mating with edge-board connectors.

Edge-to-Edge Spacing

*see "Conductor Spacing Line"

Edge-Transition Attenuation

The loss of a logic signal's switching-edge sharpness that has been caused by the absorption of the highest-frequency components by the transmission line.

Effective Color Temperature

A color temperature based on an approximation of an equivalent continuous spectrum resultant source, expressed in degrees Kelvin (K).

Effective Focal Length

A measure of the distance from the principal point of a magnification device's optical system to the corresponding focal point.

Effective Permittivity

*see "Dielectric Constant."

Effective Relative Dielectric Constant

The value of the dielectric constant obtained when experimentally determined in an application as opposed to measured values of sample material.

Elastomeric Connector

A pliant strip of flexible material with insulating and conductive elements intended for providing electrical interconnections.

Electrical Characteristics

The distinguishing electrical traits or properties of a component or assembly.

Electrodeposited Foil

A metal foil that is produced by electrodeposition of the metal onto a material acting as a cathode.

Electrodeposition

The deposition of a conductive material from a plating solution by the application of electrical current.

Electroless Deposition

The deposition of conductive material from an autocatalytic plating solution without the application of electrical current.

Electroless Plating

*see "Electroless Deposition."

Electrolytic Cleaning

Cleaning in which a current is passed through an alkaline solution with the part to be cleaned being one of the electrodes.

Electrolytic Deposition

*see "Electrodeposition."

Electromagnetic Interference (EMI)

Unwanted radiated electromagnetic energy that couples into electrical conductors.

Electromagnetic Interference (EMI)

Radiated electromagnetic energy which couples into conductors where it is not wanted.

Electron-Beam Bonding

Terminations made by heating with a stream of electrons in a vacuum.

Electroplating

*see "Electrodeposition."

Elementary Diagram

A computer-generated schematic diagram with annotations.